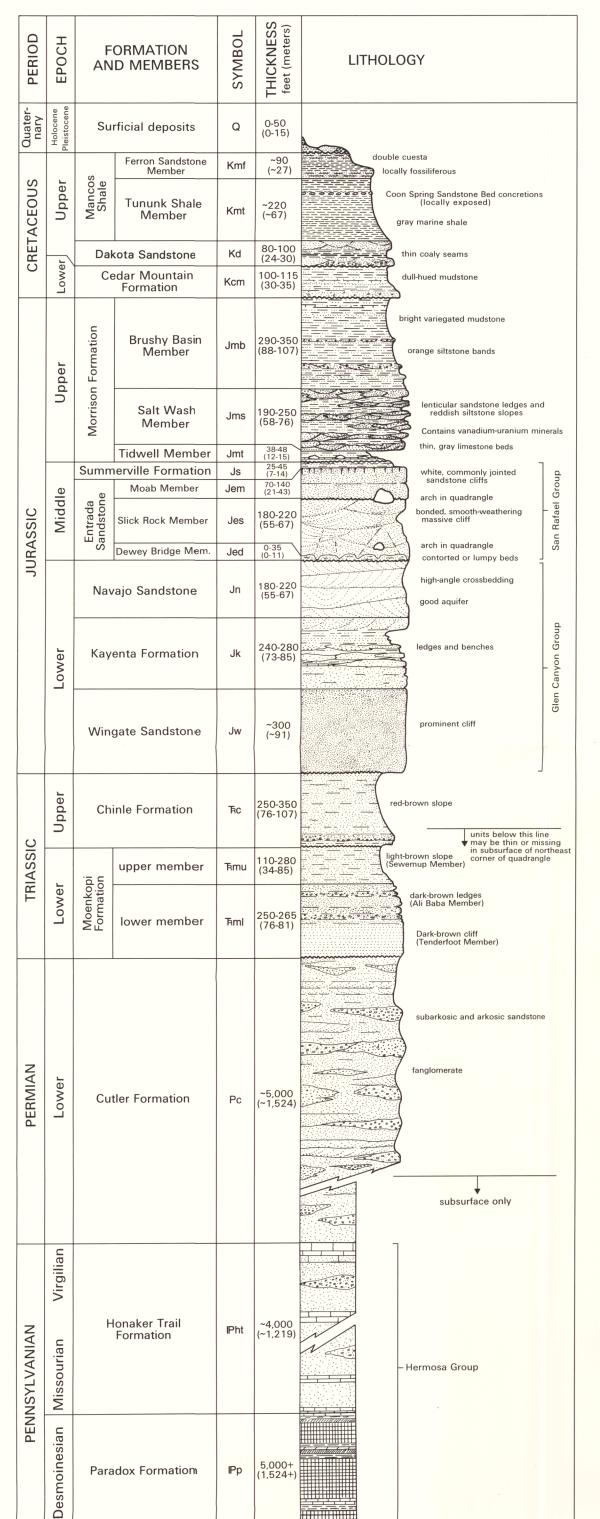
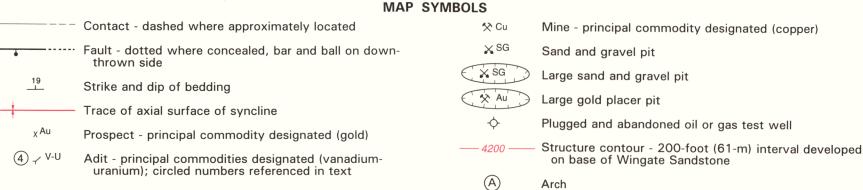
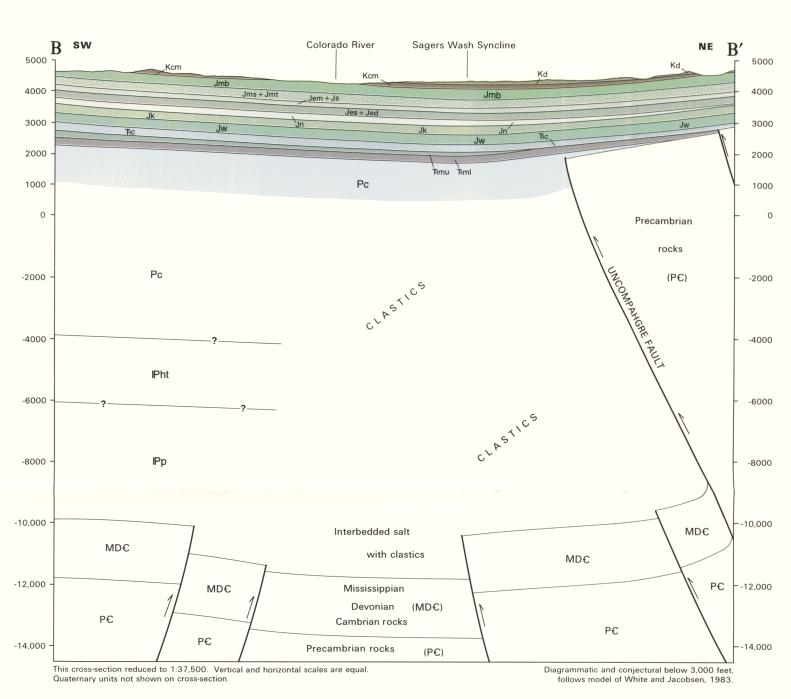


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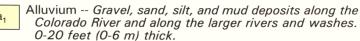
Desmoinesia







DESCRIPTION OF MAP UNITS



Qa₂

Qat₄

Alluvium and older alluvium -- Mostly sand, with considerable mud, silt, and gravel deposited by rivers, ephemeral streams, sheet wash, and by debris flows; mixed with smaller amounts of colluvial and eolian deposits; contains both locally and distantly derived materials. O-40 feet (0-12 m) thick.

Terrace deposits -- Gravel, sand, and silt, mostly from Qat₅ metamorphic and igneous terranes deposited by the Qate ancestral Colorado River, Dolores River, and from sedimentary terranes deposited by Sagers Wash; ancestral Colorado and Dolores River deposits coarser than those of Sagers Wash. 0-20 feet (0-6 m) thick.

Pediment-mantle deposits -- Poorly sorted, sand, silt, and matrix-supported, angular to subangular sandstone Qap clasts; locally contains lenses of sand and/or clastsupported boulders; clasts range from pebble to boulder size; deposits are locally derived and have an orangered-purple shading; detritus deposited as a relatively thin veneer on uneven pediment surfaces; mixed alluvial fan, ephemeral stream, colluvial, and eolian processes; deposit age is same or slightly younger than Qat3 deposits. O-30 feet (O-9 m) thick.

Eolian sand deposits -- Generally fine- to medium-grained quartzose sand forming accumulations of sand sheets and small dunes. Especially prominent in protected areas in the vicinity of the Entrada Sandstone. 0-30 feet (0-9 m) thick.

Mixed eolian and alluvial deposits -- Moderately well- to very well-sorted sand, silt, sandstone fragments, and local gravel; eolian component generally more abundant than alluvial component, although locally the alluvial may exceed the eolian component; commonly present on older surfaces in areas of limited alluvial influence; gradational with Qes and Qa2. 0-20 feet (0-6 m) thick. Mixed eolian and residual deposits -- Rubbly deposits of

bedrock unit; mixed with red silt and yellow, fine- to medium-grained, generally well-sorted sand. 0-2 feet (0.6 m) thick. Talus deposits and colluvium -- Very poorly sorted, angular boulders and smaller sized materials on, and at the base of, steep slopes; derived from resistant

sandstone or limestone clearly derived from underlying

overlying units; small deposits are not mapped; thickness varies 0-35 feet (0-9 m). Landslide deposits -- Very poorly sorted boulder- to claysized material on slopes, with hummocky upper sur-

faces; also slumps and large, slightly rotated blocks of the parent bedrock unit; large enough to map only where derived from the Brushy Basin Member of the Morrison Formation. Minimum and maximum thicknesses not determinable. Mancos Shale

Ferron Sandstone Member -- Medium- to dark-gray, Kmf interlayered mudstone and shale, and pale- to medium-gray-brown, medium- to very fine-grained sandstone; small pods or concretion-like bodies of calcareous, fine-grained sandstone mark the base; unit forms two cuestas of fine-grained sandstone and siltstone, divided by an interval of dark, carbonaceous fissile to laminated shale; bivalves, trace fossils, and calcite-cored concretions are locally present; has ripple laminations, sole marks, and a gradational upper contact; lower cuesta, middle dark shale, and upper cuesta each about 30 feet (9 m) thick. About 90 feet (27 m) thick. Tununk Shale Member -- Light- to dark-gray, brown-

gray, or black mudstone, siltstone, and shale; weathers to lighter shades; contains several 0.5- to 2-inch (1-5 cm) thick layers of white to light-gray bentonite and a few dense, thin, very fine-grained sandstone beds; trace fossils are locally common; contains Coon Spring Sandstone Bed, identified by large, rounded, light brown sandstone concretions in the upper third of the Tununk; the Coon Spring Sandstone Bed is poorly displayed in the Dewey quadrangle and best developed in the area north of McGraw Bottom. About 220 feet (67 m) thick. Dakota Sandstone -- *Pale-yellow-orange, yellow-gray, or*

gray, fine- to coarse-grained, quartz sandstone, conglomeratic sandstone and conglomerate; vellow-gray to dark-gray mudstone, claystone, and siltstone; mediumto dark-gray carbonaceous shale or mudstone; and very thin coal seams; lower part is medium- to thick-lensed and generally cross-bedded sandstone, conglomeratic sandstone, and conglomerate; clasts in the conglomerate are generally less than 2 inches (5 cm) in diameter; middle part contains most of the mudstone, claystone, siltstone, carbonaceous shale and coal; upper part is fine- to medium- grained, cross-bedded sandstone; upper contact is a sharp, irregular surface; upper and lower parts are resistant and cliff forming, middle part is generally non-resistant; thicknesses of three parts vary dramatically across the quadrangle. 80-100 feet (24-30 m) thick.

Cedar Mountain Formation -- Variegated, slope-forming mudstone interbedded with ledge-forming, gray and brown quartzite and sandstone, conglomerate, and gritstone; mudstone mostly light green, gray, lavender, and white; contains local resistant, light-gray limestone nodules that litter the slopes; upper contact at base of irregular and channel-fill sandstone and conglomerate of the overlying Dakota Sandstone; lower part is generally a cliff-forming quartzite, sandstone, or gritstone. 100-115 feet (30-35 m) thick. Morrison Formation

Brushy Basin Member -- Interbedded silt and clay mudstone and muddy sandstone; commonly banded maroon, orange, green, gray, and lavender; forms steep slope with slight ledges that are more numerous in the lower part; locally contains small, light-gray, resistant,

limestone nodules. 290-350 feet (88-107 m) thick. Salt Wash Member -- Interbedded sandstone and mudstone; sandstone is light to yellow gray, medium to coarse grained, cross-bedded in lenses as much as 25 feet (7.5 m) thick, and resistant; mudstone is generally red with less common green horizons, and forms slopes. 190-250 feet (58-76 m) thick.

Tidwell Member -- Red, lavender, and brown siltstone containing thin, nodular, gray, hard limestone beds and local large concretions of white chalcedony and quartz; slope forming. 38-48 feet (11.5-14.5 m) thick.

Summerville Formation -- Interbedded sandstone and silt stone; sandstone is white, yellow gray, or light brown, fine to medium grained, thin to medium bedded, forms an especially resistant ledge with ripple marks near top of unit; siltstone is mostly red, some green gray, and forms partings between sandstone beds and is found in thick, indistinctly bedded intervals; unit forms a ledgy steep slope. 25-45 feet (7-14 m) thick; thinner in western half of quadrangle.

Entrada Sandstone Moab Member -- Pale-orange, gray-orange, pale-yellowbrown, or light-gray, fine- to medium-grained, calcareous, massive, cliff-forming sandstone; upper surfaces prominently jointed; sucrosic weathering. 70-140 feet (21-43 m) thick.

Slick Rock Member -- Red-orange or light-brown, very fine- to fine-grained eolian sandstone; calcareous and iron oxide cemented; cross-bedded, massive, weathers to form smooth cliffs and bare rock slopes; commonly covered with residual sand; not as resistant as Moab Member above, but more resistant than Dewey Bridge Member below; common "stonepecker" holes and commonly color banded; deep alcoves have formed along upper contact with Moab Member. 180-220 feet (55-67 m) thick.

Dewey Bridge Member -- Dark-red, fine-grained, silty sandstone; mostly iron oxide cemented; in irregular contorted, indistinct "lumpy" medium to thick beds; upper contact with Slick Rock Member is very irregular. 0-35 feet (0-11 m) thick.

Navajo Sandstone -- Orange to light-gray, eolian sandstone, mostly fine grained, cemented with silica and calcite; crops out as vertical cliffs in deep canyons and as domes and rounded knolls elsewhere; well displayed, high-angle cross beds; contains local thin, hard, gray carbonate beds (Jnl). 180-220 feet (55-67 m) thick; may thin to 100 feet (30 m) in the subsurface under the northeast corner of the quadrangle.

Kayenta Formation -- Moderate-orange-pink, red-brown, and lavender sandstone interbedded with subordinate dark-red-brown to gray-red silty mudstone, lavendergray intraformational conglomerate, and limestone of fluvial or lacustrine origin; light-orange, light-gray, or white eolian sandstone beds become more prominent in upper third of unit; commonly micaceous; mostly calcite cemented; resistant, forms thick step-like ledges between the more massive Navajo and Wingate Sandstones; upper part less resistant, important bench former in quadrangle. 240-280 feet (73-85 m) thick. Wingate Sandstone -- Mostly light-orange-brown, moderate-orange-pink, or moderate red-orange, fine-grained,

siliceous cement; forms nearly vertical cliffs along canyon walls; cliff surfaces commonly with dark-brown desert varnish veneer. About 300 feet (91 m) thick. Chinle Formation -- Moderate-red-brown or gray-red, fineto coarse-grained sandstone and siltstone with subordinate pebble- or gritstone, and gray limestone; slopeforming with prominent ledges; slope-forming units fine grained and indistinctly bedded; ledge formers are fine

well-sorted, cross-bedded sandstone; calcareous and

to coarse grained, and platy to very thick bedded; strong ledge of sandstone or pebble conglomerate near base underlain with mottled siltstone. 250-350 feet (76-107 m) thick, thinning northeasterly; may be as thin as 100 feet (30 m) in subsurface in northeast corner of the quadrangle. Moenkopi Formation Upper member -- Pale-red-orange to gray-red, slope-forming siltstone with subordinate red-brown, fine-

grained sandstone; thinly laminated to thin bedded;

commonly cemented with gypsum; sandstone is

commonly ripple marked; forms slope. 110-280 feet (34-85 m) thick; thinning to northeast; may be missing in subsurface in northeast corner of quadrangle. Lower member -- Upper part is dark red-brown and lavender, silty, mica- and feldspar-bearing, platy to thick-bedded, commonly ripple-marked, ledge-forming sandstone and conglomeratic sandstone interbedded with slightly darker red-brown to red-orange, slopeand recess-forming sandstone, siltstone, and silty mudstone (Ali Baba Member); lower part slightly

lighter red-brown, fine-grained, micaceous and feldspar-bearing, thick bedded to massive, and cliffforming sandstone (Tenderfoot Member). 250-265 feet (76-81 m) thick along outcrops; may be missing under northeast corner of quadrangle. Cutler Formation -- Red-brown and red-purple, subarkosic

to arkosic sandstone, conglomeratic sandstone, and conglomerate interbedded with silty and sandy mud stone and shale; thin bedded to massive; forms steep slopes, ledges, and cliffs. About 5,000 feet (1,524 m) thick in southeast corner of quadrangle; maximum of 800 feet (244 m) exposed in quadrangle. Honaker Trail Formation -- Interbedded micaceous sand-

S., R. 24 E., in southeast corner of quadrangle. Paradox Formation -- Salt, shale, gypsum, and limestone. Unit in subsurface only. 5,000 + feet (1,524 + m) thick in southeast corner of quadrangle.

stone, conglomerate and limestone. Unit in subsurface

only. About 4,000 feet (1,219 m) thick in Richfield Oil

Onion Creek Unit #1, NE1/4, SW1/4, section 31, T. 23

